

1 1. (Original) A method of searching images for data contained within said images, said  
2 method comprising the steps of:  
3 providing a plurality of training images;  
4 extracting image attributes from said training images;  
5 classifying training images according to said extracted attributes;  
6 selecting a particular classifier for each group of training images;  
7 collecting a plurality of images available from remotely connected computers;  
8 indexing said collected images; and  
9 providing an index of said collected images for interrogation by users.

1 2. (Original) A method as in claim 1 wherein the step of extracting attributes comprises  
2 identifying image features characteristic of a particular numerically generated image type.

1 3. (Original) A method as in claim 2 wherein the training images include groups of one or  
2 more of charts selected from a plurality of known charts consisting of column charts, bar  
3 charts, line charts, pie charts, scatter charts, area charts, surface charts, and three-  
4 dimensional charts.

1 4. (Original) A method as in claim 3 wherein the step of extracting attributes identifies  
2 image features and assigns any identified image features as attributes, said image features  
3 including horizontal lines, vertical lines, percentage of white area, circular arcs and text.

1 5. (Original) A method as in claim 1 wherein the step of classifying images comprises  
2 providing image attributes for each image to a plurality of classifiers, said plurality of  
3 classifiers being selected from the group consisting of classification trees, discriminant  
4 functions, regression trees, support vector machines, neural nets and hidden Markov models.

1 6. (Original) A method as in claim 5 wherein one of said classifiers is selected for each  
2 chart type.

1 7. (Original) A method as in claim 5 wherein said collected images are indexed in the  
2 indexing step by extracting attributes and providing extracted attributes to said classifiers,  
3 said classifiers identifying an image type, said images being indexed according to said  
4 attributes and said image type.

1 8. (Original) A method of extracting data from images located on remotely connected  
2 machines, said images having been indexed according to claim 7, said method comprising  
3 the steps of:  
4 receiving a query from a user;  
5 identifying indexed images responsive to said query; and  
6 presenting identified images to said user in response to said query.

1 9. (Original) A method as in claim 8 wherein prior to presenting identified images to the  
2 user, chart data is extracted from the images and the extracted chart data is presented to the  
3 user, the user being allowed to select images for viewing.

1 10. (Original) A method as in claim 9 further comprising the steps of:  
2 providing additional data as supplemental data to said extracted chart data; and  
3 generating a chart representative of supplemented data, said generated chart  
4 being provided responsive to said query.

1 11. (Original) A search engine for searching images located on remotely connected  
2 machines and extracting data from said images, said search engine comprising:  
3 means for receiving a query from a user;  
4 means for identifying images responsive to said query; and  
5 means for presenting identified images to said user in response to said query.

1 12. (Original) A search engine as in claim 11 wherein the means for identifying images  
2 comprises a plurality of classifiers, said plurality of classifiers being selected as optimally  
3 identifying a particular image type and selected classifiers being selected from the group  
4 consisting of classification trees, discriminant functions, regression trees, support vector  
5 machines, neural nets and hidden Markov models.

1 13. (Original) A search engine as in claim 12 further comprising data extraction means for  
2 extracting chart data from images, the extracted chart data being presented to the user for  
3 selecting images for viewing.

1 14. (Original) A search engine as in claim 13 further comprising:

2 means for supplementing said extracted chart data with supplemental data; and

3 chart generation means for generating a chart representative of supplemented

4 chart data, said generated chart being provided responsive to said query.

1 15. (Original) A search engine as in claim 14 wherein the image types include column

2 charts, bar charts, line charts, pie charts, scatter charts, area charts, surface charts, and three-

3 dimensional charts.

1 16. (Original) A search engine as in claim 15 wherein image features including horizontal

2 lines, vertical lines, percentage of white area, circular arcs and text.

1 17. (Original) A search engine as in claim 16 further including an image identification

2 trainer comprising:

3 means for providing a plurality of pre-classified training images;

4 means for classifying training images according to extracted image features;

5 means for selecting a particular one of said plurality of classifiers as being an

6 optimum for classifier for a corresponding group of training images;

7 means for collecting a plurality of images available from remotely connected

8 computers;

9 means for indexing said collected images;

10 means for storing an index of indexed said collected images; and

11 means for providing said index for interrogation by users.

1 18. (Original) A computer program product fixed in a computer useable medium for  
2 searching images located on remotely connected machines and extracting data from said  
3 images, said computer program product comprising:

4 computer code means for receiving a query from a user;

5 computer code means for identifying images responsive to said query; and

6 computer code means for presenting identified images to said user in

7 response to said query.

1 19. (Original) A computer program product as in claim 18 wherein the computer code  
2 means for identifying images comprises a plurality of classifiers.

1 20. (Original) A computer program product as in claim 19 wherein the plurality of  
2 classifiers comprises classification trees, discriminant functions, regression trees, support  
3 vector machines, neural nets and hidden Markov models.

1 21. (Original) A computer program product as in claim 20 further comprising computer  
2 code means for extracting chart data from images, the extracted chart data being presented to  
3 the user for selecting images for viewing.

1 22. (Original) A computer program product as in claim 21 further comprising:  
2 computer code means for supplementing said extracted chart data with  
3 supplemental data; and  
4 computer code means for generating a chart representative of supplemented  
5 chart data, said generated chart being provided responsive to said query.

1 23. (Original) A computer program product as in claim 22 wherein the image types include  
2 column charts, bar charts, line charts, pie charts, scatter charts, area charts, surface charts,  
3 and three-dimensional charts.

1 24. (Original) A computer program product as in claim 23 wherein image features include  
2 horizontal lines, vertical lines, percentage of white area, circular arcs and text.

1 25. (Original) A computer program product as in claim 24 further including an image  
2 identification trainer comprising:  
3 computer code means for providing a plurality of pre-classified training images;  
4 computer code means for classifying training images according to extracted  
5 image features;  
6 computer code means for selecting a particular one of said plurality of  
7 classifiers as being an optimum classifier for a corresponding group  
8 of training images;  
9 computer code means for collecting a plurality of images available from  
10 remotely connected computers;  
11 computer code means for indexing said collected images; and  
12 computer code means for providing an index of said collected images for  
13 interrogation by users.